

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims

1. (Original) A computer program product comprising computer-executable instructions for causing a computer to:

obtain performance data related to performance of a broadband network; and

provide a hierarchical display of network performance, the hierarchical display including a first level with first data indicative of network operation and a second level with second data indicative of a plurality of issues comprising the first level of network performance;

wherein the second level includes multiple issues that contain a third level with third data indicative of network issues comprising at least some of the secondary level issues.

2. (Original) The computer program product of claim 1 wherein the first data are indicative of overall performance of one of the network, and a selected portion of the network.

3. (Original) The computer program product of claim 2 wherein the first data are indicative of overall performance of the network and the issues at the second level include at least one of connectivity and traffic.

4. (Original) The computer program product of claim 1 further comprising instructions for causing the computer to provide more detail of issues comprising a selected level.

5. (Original) The computer program product of claim 4 wherein the more detail includes at least one of locations of network elements associated with the selected level, and metrics corresponding to the network elements and associated with at least one issue comprising the selected level.

6. (Original) The computer program product of claim 5 further comprising instructions for causing the computer to provide more detail regarding a selected portion of the more detail provided of issues comprising a selected level.

7. (Original) The computer program product of claim 5 further comprising instructions for causing the computer to sort the more detail according to at least one selected criterion.

8. (Original) The computer program product of claim 7 further comprising instructions for causing the computer to analyze the more detail and to do at least one of:
provide at least one of an indication of a likely network problem, and a suggested action for addressing the likely network problem; and
implement corrective action to attempt to address the likely network problem.

9. (Original) The computer program product of claim 1 wherein the collected data are metrics of network performance derived from raw data indicative of network activity.

10. (Original) The computer program product of claim 9 further comprising instructions for causing the computer to derive the metrics from the raw data.

11. (Original) The computer program product of claim 10 wherein the instructions for causing the computer to derive the metrics include instructions for causing the computer to:
obtain first metrics of performance of at least a portion of the broadband network; and
combine a plurality of first metrics into a second metric of network performance indicative of a higher-level of network performance than indicated by the first metrics.

12. (Original) The computer program product of claim 11 wherein the instructions for causing the computer to combine first metrics weight different metrics differently dependent upon perceived relevance of an issue associated with the metric to network performance.

13. (Original) The computer program product of claim 10 wherein the instructions for causing the computer to derive the metrics include instructions for causing the computer to perform comparisons of first metrics derived from the raw data with thresholds and to provide second metrics based upon the comparisons.

14. (Original) The computer program product of claim 13 wherein the second metrics provide indicia of grades of degraded performance of portions of the network as a function of time.

15. (Original) The computer program product of claim 1 wherein the hierarchical display is independent of an amount of network elements contributing to the indicia of network performance.

16. (Original) The computer program product of claim 15 wherein the second data are indicative of network issues perceived to affect network performance more than network issues absent from the display.

17. (Original) The computer program product of claim 1 wherein the displayed data associated with levels provide indicia of absolute performance of portions of the network associated with the respective levels.

18. (Original) The computer program product of claim 1 wherein the displayed data associated with a level provide indicia of relative performance of portions of the network associated with the respective levels.

19. (Original) The computer program product of claim 18 wherein the displayed data associated with levels provide indicia of absolute performance of portions of the network associated with the respective levels.

20. (Original) The computer program product of claim 19 further comprising instructions for providing a display of the data associated with levels over time.

21. (Original) The computer program product of claim 19 further comprising instructions for providing a display of the data associated with levels over time.

22. (Original) The computer program product of claim 1 wherein the first and second data provide indicia of grades of degradation of performance of at least portions of the network as a function of time.

23. (Original) The computer program product of claim 22 wherein the network is a DOCSIS network including cable modems and cable modem termination systems, and the first and second data indicate numbers of cable-modem hours at the grades of degradation.

24. (Currently Amended) ~~A~~The computer program product of Claim 1, wherein
~~comprising computer-executable instructions for causing a computer to:~~

said instruction to provide a hierarchical display includes an instruction to obtain
indicia of cumulative amounts of time that network elements of at least a desired portion of a
broadband network were considered at corresponding qualities of network performance
during a designated time frame; ~~and~~said computer executable instructions further comprising:

an instruction to display the cumulative amounts in a hierarchy of network issues, the
hierarchy including a summary category including summary values indicating total
cumulative amounts of time that the network elements in the at least a desired portion of the
network were considered at corresponding qualities of performance, the hierarchy further
comprising a plurality of sub-categories contributing to the summary category, and the sub-
categories each further comprising at least one sub-sub-category contributing to the sub-
categories.

25. (Original) The computer program product of claim 24 wherein the summary values indicate total cumulative amounts of time that all the network elements in the at least a desired portion of the network were considered at corresponding qualities of performance.

26. (Original) The computer program product of claim 24 further comprising instructions for causing the computer to indicate that categories contributing to a higher-level category are one of direct contributors and indirect contributors to the higher-level category.

27. (Original) The computer program product of claim 24 further comprising instructions for causing the computer to display additional information regarding a selected category of cumulative amounts.

28. (Original) The computer program product of claim 27 further comprising instructions for causing the computer to display further additional information regarding selected additional information.

29. (Original) The computer program product of claim 24 further comprising instructions for causing the computer to determine network areas that are most-negatively contributing to network performance.

30. (Original) The computer program product of claim 29 further comprising instructions for causing the computer to recommend action, regarding at least one of the network areas that are most-negatively contributing to network performance, for improving network performance.

31. (Original) The computer program product of claim 29 further comprising instructions for causing the computer to implement action, regarding at least one of the network areas that are most-negatively contributing to network performance, for improving network performance.

32. (Original) The computer program product of claim 24 wherein the instructions for causing the computer to obtain indicia of cumulative amounts of time that network elements cause the computer to access a storage area containing the indicia.

33. (New) A method, comprising:
obtaining performance data related to performance of a broadband network; and
providing a hierarchical display of network performance, the hierarchical display including a first level with first data indicative of network operation and a second level with second data indicative of a plurality of issues comprising the first level of network performance, wherein

the second level includes multiple issues that contain a third level with third data indicative of network issues comprising at least some of the secondary level issues.

34. (New) The method of claim 33, wherein the first data are indicative of overall performance of one of the network, and a selected portion of the network.

35. (New) The method of claim 34, wherein the first data are indicative of overall performance of the network and the issues at the second level include at least one of connectivity and traffic.

36. (New) The method of claim 33, further comprising:
providing more detail of issues comprising a selected level.

37. (New) The method of claim 36, wherein the more detail includes at least one of locations of network elements associated with the selected level, and metrics corresponding to the network elements and associated with at least one issue comprising the selected level.

38. (New) The method of claim 37, further comprising:
providing more detail regarding a selected portion of the more detail provided of issues comprising a selected level.

39. (New) The method of claim 37, further comprising:
sorting the more detail according to at least one selected criterion.

40. (New) The method of claim 39, further comprising:
providing at least one of an indication of a likely network problem, and a suggested action for addressing the likely network problem; and
implementing corrective action to attempt to address the likely network problem.

41. (New) The method of claim 33, wherein the collected data are metrics of network performance derived from raw data indicative of network activity.

42. (New) The method of claim 41, further comprising:
deriving the metrics from the raw data.

43. (New) The method of claim 42, wherein said step of deriving the metrics comprises:

obtaining first metrics of performance of at least a portion of the broadband network;

and

combining a plurality of first metrics into a second metric of network performance indicative of a higher-level of network performance than indicated by the first metrics.

44. (New) The method of claim 43, wherein said step of combining first metrics comprises:

weighting different metrics differently depending upon perceived relevance of an issue associated with the metric to network performance.

45. (New) The method of claim 42, said step of deriving the metrics comprises:

performing comparisons of first metrics derived from the raw data with thresholds;

and

providing second metrics based upon the comparisons.

46. (New) The method of claim 45, wherein the second metrics provide indicia of grades of degraded performance of portions of the network as a function of time.

47. (New) The method of claim 33, wherein the hierarchical display is independent of an amount of network elements contributing to the indicia of network performance.

48. (New) The method of claim 47, wherein the second data are indicative of network issues perceived to affect network performance more than network issues absent from the display.

49. (New) The method of claim 33, wherein the displayed data associated with levels provide indicia of absolute performance of portions of the network associated with the respective levels.

50. (New) The method of claim 33, wherein the displayed data associated with a level provide indicia of relative performance of portions of the network associated with the respective levels.

51. (New) The method of claim 50, wherein the displayed data associated with levels provide indicia of absolute performance of portions of the network associated with the respective levels.

52. (New) The method of claim 51, further comprising:
displaying the data associated with levels over time.

53. (New) The method of claim 51 further comprising:
displaying the data associated with levels over time.

54. (New) The method of claim 33, wherein the first and second data provide indicia of grades of degradation of performance of at least portions of the network as a function of time.

55. (New) The method of claim 54, wherein the network is a DOCSIS network including cable modems and cable modem termination systems, and the first and second data indicate numbers of cable-modem hours at the grades of degradation.

56. (New) The method of Claim 33, wherein
said step of providing a hierarchical display includes obtaining indicia of cumulative amounts of time that network elements of at least a desired portion of a broadband network were considered at corresponding qualities of network performance during a designated time frame; said method further comprising:

displaying the cumulative amounts in a hierarchy of network issues, the hierarchy including a summary category including summary values indicating total cumulative amounts of time that the network elements in the at least a desired portion of the network were considered at corresponding qualities of performance, the hierarchy further comprising a plurality of sub-categories contributing to the summary category, and the sub-categories each further comprising at least one sub-sub-category contributing to the sub-categories.

57. (New) The method of claim 56, wherein the summary values indicate total cumulative amounts of time that all the network elements in the at least a desired portion of the network were considered at corresponding qualities of performance.

58. (New) The method of claim 56, further comprising:
indicating that categories contributing to a higher-level category are one of direct contributors and indirect contributors to the higher-level category.

59. (New) The method of claim 56, further comprising:

displaying additional information regarding a selected category of cumulative amounts.

60. (New) The method of claim 59, further comprising:

displaying further additional information regarding selected additional information.

61. (New) The method of claim 56, further comprising:

determining network areas that are most-negatively contributing to network performance.

62. (New) The method of claim 61, further comprising:

recommending action, regarding at least one of the network areas that are most-negatively contributing to network performance, for improving network performance.

63. (New) The method of claim 61, further comprising:

implementing action, regarding at least one of the network areas that are most-negatively contributing to network performance, for improving network performance.

64. (New) The method of claim 56, wherein said step of obtain indicia of cumulative amounts of time that network elements comprises:

accessing a storage area containing the indicia.

65. (New) An apparatus, comprising:

means for obtaining performance data related to performance of a broadband network;
and

means for providing a hierarchical display of network performance, the hierarchical display including a first level with first data indicative of network operation and a second level with second data indicative of a plurality of issues comprising the first level of network performance, wherein

the second level includes multiple issues that contain a third level with third data indicative of network issues comprising at least some of the secondary level issues.

66. (New) The apparatus of Claim 65, wherein

said means for providing a hierarchical display includes means for obtaining indicia of cumulative amounts of time that network elements of at least a desired portion of a broadband network were considered at corresponding qualities of network performance during a designated time frame; said apparatus further comprising:

means for displaying the cumulative amounts in a hierarchy of network issues, the hierarchy including a summary category including summary values indicating total cumulative amounts of time that the network elements in the at least a desired portion of the network were considered at corresponding qualities of performance, the hierarchy further comprising a plurality of sub-categories contributing to the summary category, and the sub-categories each further comprising at least one sub-sub-category contributing to the sub-categories.